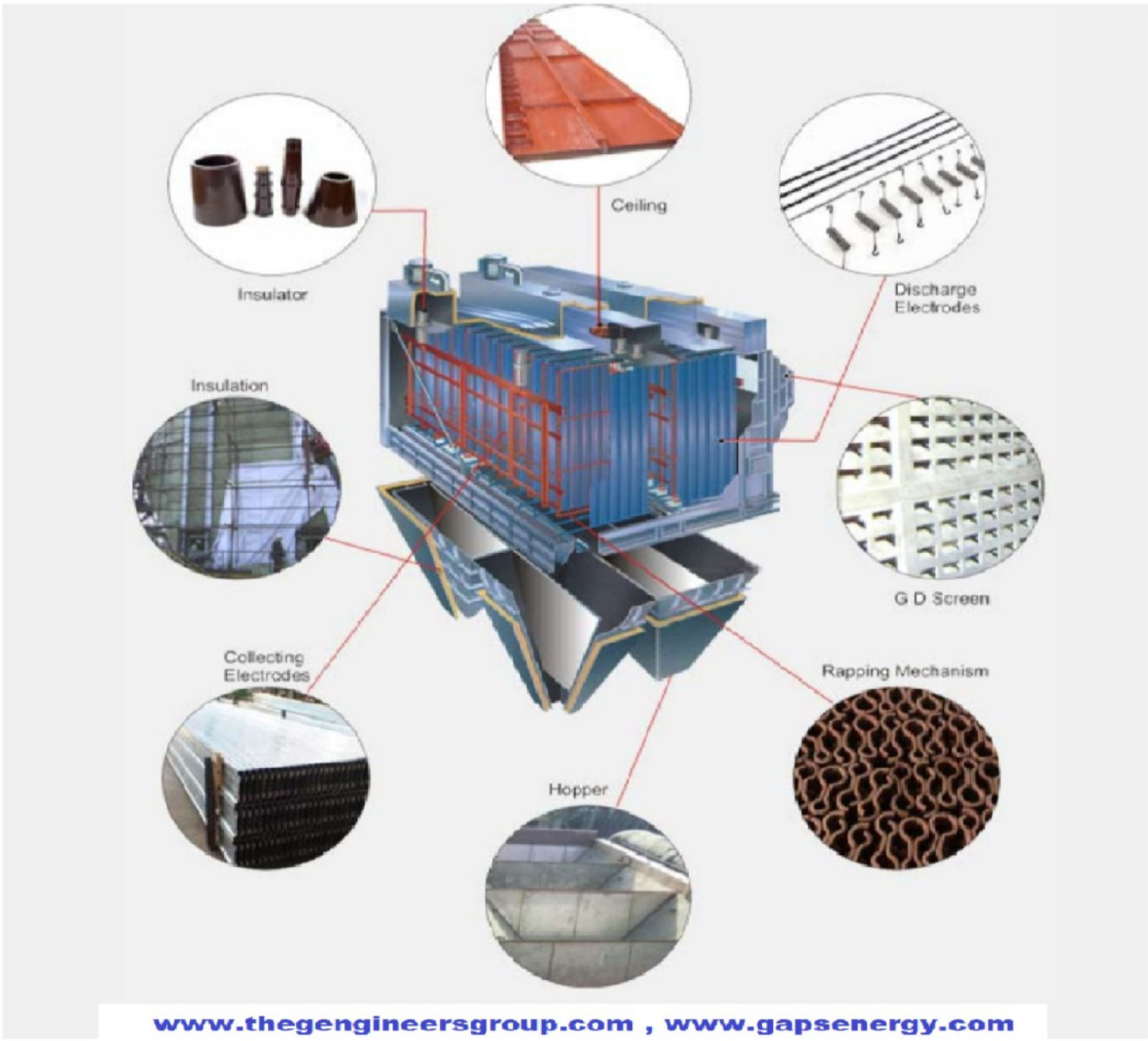
GAPS ENERGY PVT. LTD.

☆ Electrostatic Precipitator Components ☆



www.thegengineersgroup.com , www.gapsenergy.com

INTRODUCTION:-

We are one of the OEM manufacturers & Supplier of ESP Components. We have the state of art facilities for manufacturing and supplier of ESP components like , Collecting & Discharge Electrodes,Hopper,Silo, Insulators,Hammer Systems, GD Screen, Hopper & Insulator Heaters, Fly Ash Level Detection, Rapping Motor, Thermostat,ESP INSULATORS, Magnetic-Impulse Rapper , Gas Distribution Screen, High voltage electrical systems ,Damper,RAV, Screw Conveyor,Slide Gate, Heavy fabrication/Structure (MS/BQ/SS), etc…

Our focus is on manufacturing through new technology, processes and automation. Currently we are supplying parts to various customers like, Thermax Limited, L & T Limited, ISGEC Heavy Engg, Clide-Bermon, F L Smith, LNVT, GEA Process, V T Corporation, Clair Engineers etc.

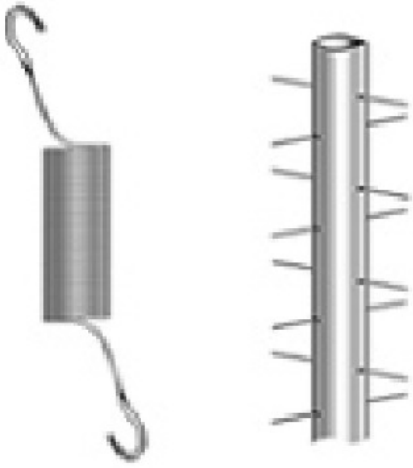
1. EMITTING ELECTRODES/DISCHARGE ELECTRODES.:-

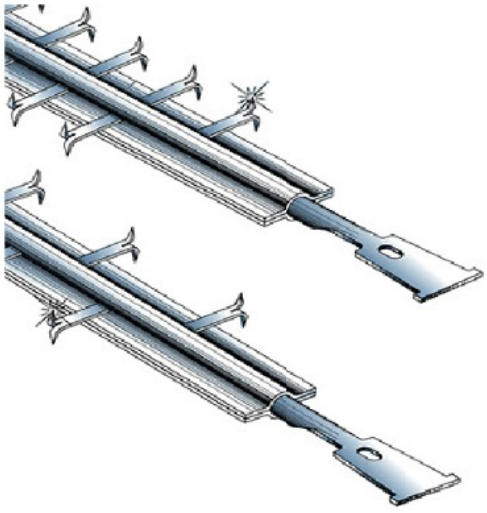
Emitting Electrodes, also known as Discharge Electrodes is the heart of the ESP. These are High Voltage internal and ionizes the gases and creates the electrical field. When the voltage breaks the gas down at the surface of the electrode, it generates corona power. This leads to creation of corona tufts on the surface of the electrode. Negative polarity voltage is applied to the electrode. The electrode design depends on various factors including the process for which the ESP is installed and the properties and composition of the flue gas.

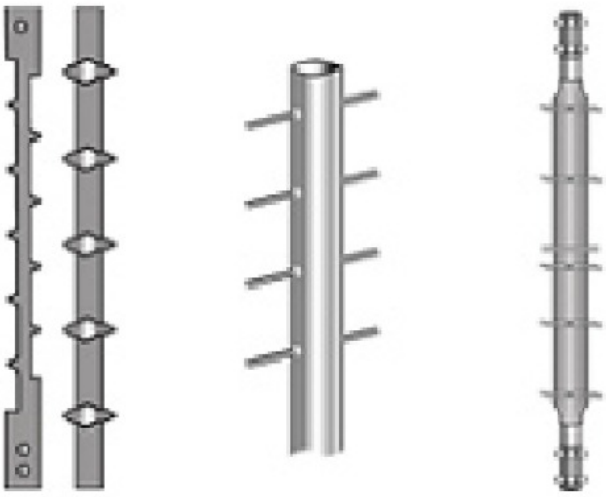
Types of Emitting Electrodes: For the corona generation, initially thin and round wires were installed. In some cases, twisted, barbed or square wires were also used.Nowadays, mostly rigid support frames are used for the electrodes. Frames may consist of spiral-spring electrodes, serrated strips, or needle / spikes mounted on a support strip. Rigid type electrodes are also used in some applications, which is made from a single piece of fabricated metal.

GEPL manufactures and supplies Emitting / Discharge Electrodes for Electrostatic Precipitators of all designs and makes. Raw material used for the manufacturing directly impacts the life and durabity of the Electrodes. The finish of the product greatly affects the corona generation and overall performance of the ESP. As such, proper care is taken in the manufacturing of each and every **Emitting Electrode** as well as the packing of the finished materials. The following designs of Emitting Electrodes are manufactured by us: -

- Spiral Emitting Electrodes
- Pipe and Spike Type Electrode
- Multi-peak Discharge Electrodes
- Straight Round Wires
- Twisted pairs of Wires
- Barbed Discharge Wires
- Rigid masts
- Rigid frames







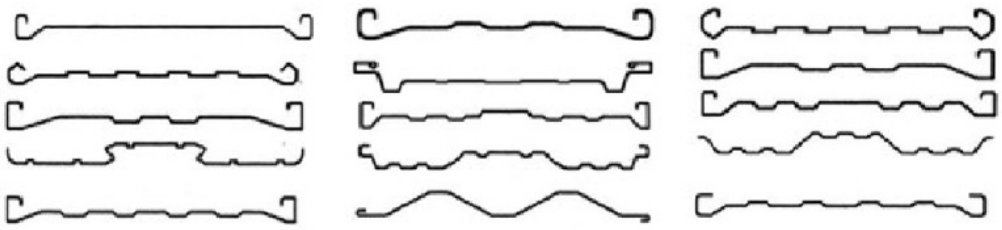
2.COLLECTING ELECTRODES:-

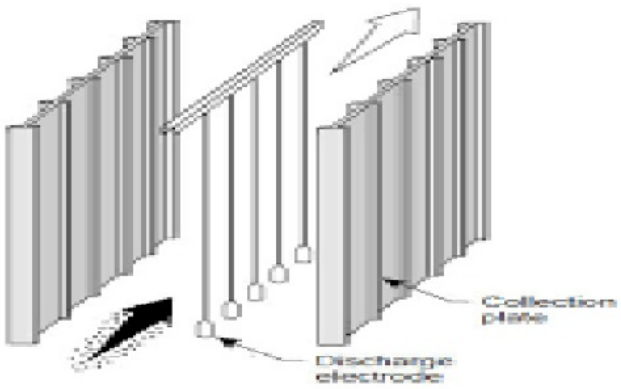
Collecting Electrodes are the collection surface made of sheet metal on which the particulate matter is collected after being negatively charged within the gas passage of the ESP. Designs of the plates vary from manufacturer to manufacturer. These plates are secured to the ESP shell at ground potential and serve as the positive anode of the gas passage.

General details of the Collecting Plates are given below: -

- Raw Material: Normally the Collecting Plates are made of Carbon Steel. However, for some applications where carbon steel made plates are corroded regularly, these are manufactured with stainless steel or an alloy steel.

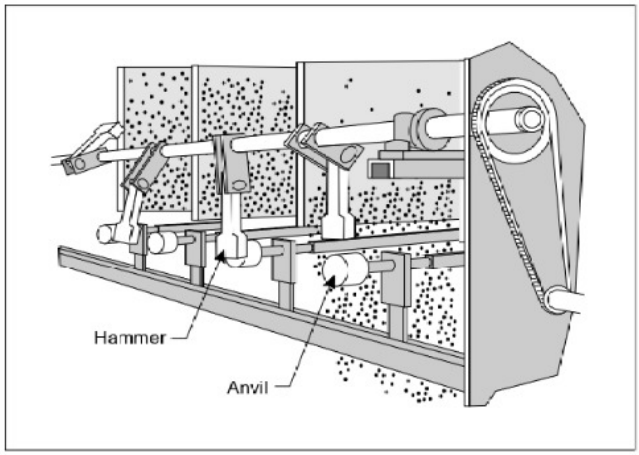
- Sheet Thickness: The thickness of the collecting plates range from 0.5 to 2.0mm Or As per Customer requirement.





3.Hammer/Anvil :-

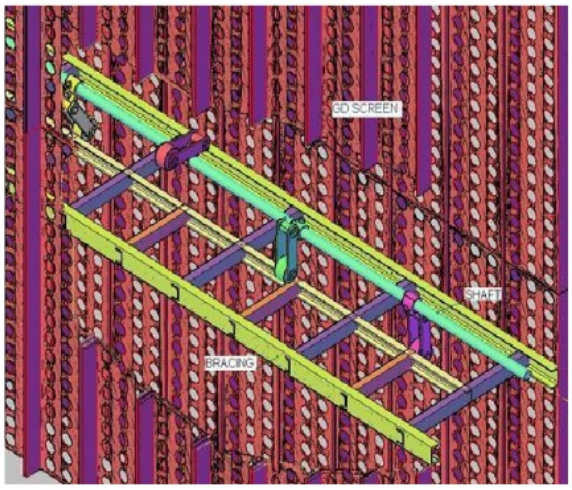
Collection plates are rapped by a number of methods. One rapper system uses hammers mounted on a rotating shaft. As the shaft rotates, the hammers drop (by gravity) and strike anvils that are attached to the collection plates. Rappers can be mounted on the top or on the side of collection plates.



Typical hammer/anvil rappers for collection plates

4.GAS DISTRIBUTION SCREEN:-

Gas Distribution Devices consist of turning vanes in the inlet ductwork, and perforated gas distribution plates in the inlet and/or outlet fields of the precipitator. These Screens are of modular design manufactured out of Steel sheets and hang within a frame work in the ESP inlet casing to maintain uniform distribution pattern of gas flow throughout the cross section of ESP.



5.ESP THERMOSTATS, HEATING ELEMENTS:-

Hopper Heater: The suspended particulate matter (SPM) from the Flue Gas Stream passing through the ESP's are collected in the hoppers below. These are then removed from the ESP and carried by Conveyors of various designs. However, choking and accumulation of this dust sometimes happens in the hoppers due to the presence of moisture and low temperature in the hoppers. This adversely affects the performance of an ESP. As such, hopper heaters are installed in the hopper walls which helps in maintaining the temperature in the hoppers, thereby avoiding any choking or accumulation.

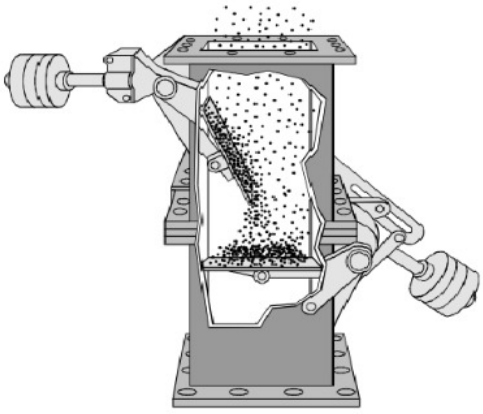
Insulator Heaters: The successful performance of an ESP is depending on many factory including the temperature inside the ESP. Air Ingress takes place in the ESP's through the openings of the Insulators. Heaters are installed here to heat the entering air thereby maintaining the temperature within the ESP.

GEPL is a One of the top solutions for all internals of ESP including the electrical parts. The following parts are available with us mostly ex-stock: -

- Hopper Heaters
- Insulator Heaters
- Thermostats
- Disconnecting Switch Assembly

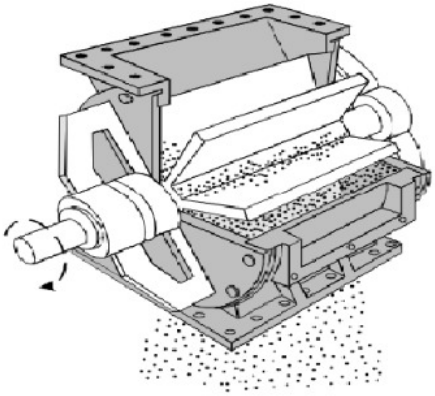
6.Double Flap Valve :-

As dust collects inthe hopper, the weight of the dust pushes down the counterweight of the top flap and dustdischarges downward. The top flap then closes, the bottom flap opens, and the materialfalls out. This type of valve is available in gravity-operated and motorized versions.



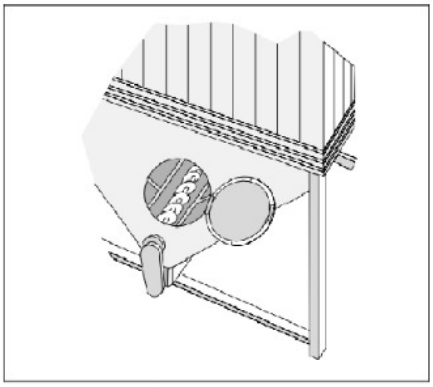
7.Rotary Airlock valves:

The valve is designedwith a paddle wheel that is shaft mounted and driven by a motor. Therotary valve is similar to a revolving door; the paddles or blades form an airtight sealwith the housing, and the motor slowly moves the blades to allow the dust to dischargefrom the hopper.

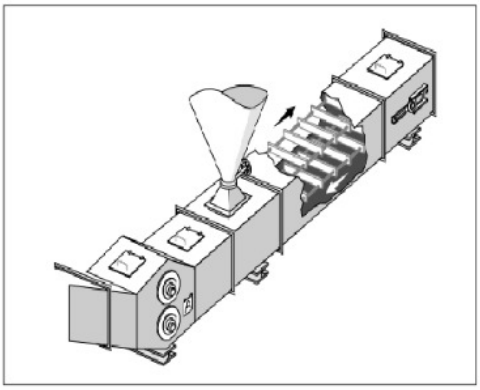


8.Screw Conveyors:

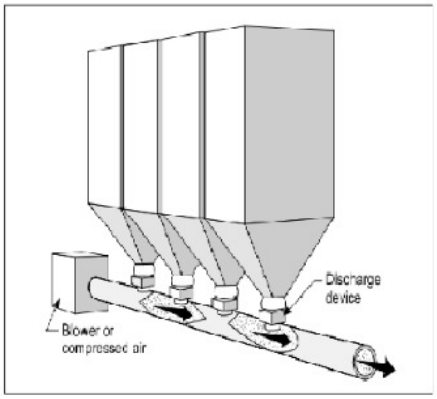
After the dust leaves the discharge device it is transported to the final disposal destinationby screw conveyers. Screw conveyors can be used as dischargedevices when located in the bottom of the hopper oras a separate conveyor to move dust after it is discharged. Screw conveyers employ arevolving screw feeder to move the dust through the conveyor.



Screw conveyor



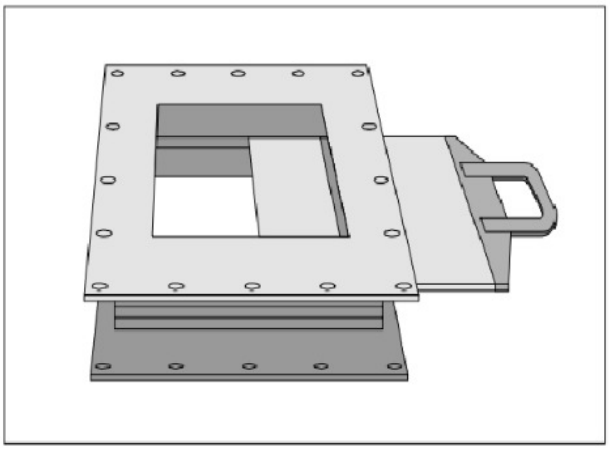
Drag conveyor



Pneumatic conveyor for transporting dust from ESP

9.AUTOMATED /MANUAL SLIDE GATE :-

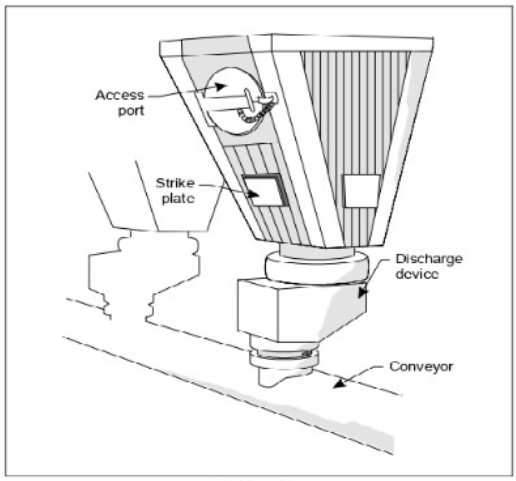
A discharge device is necessary for emptying the hopper and can be manual or automatic. The simplest manual discharge device is the slide gate, a plate held in place by a frame and sealed with gaskets. When the hopper needs to be emptied, the plate is removed and the material is discharged. Other manual discharge devices include hinged doors and drawers. The collector must be shut down before opening any manual discharge device. Thus, manual discharge devices are used only on very small units that operate on a periodic basis.



Slide-gate

10.HOPPERS:-

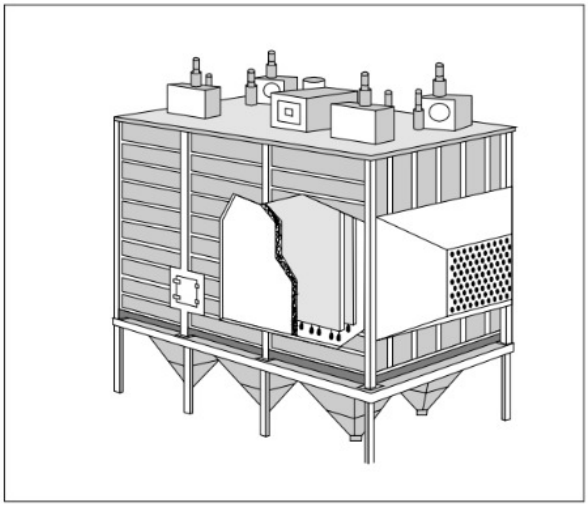
When the electrodes are rapped, the dust falls into hoppers and is stored temporarily before it is disposed in a landfill or reused in the process. Dust should be removed as soon as possible to avoid packing, which would make removal very difficult. Hoppers are usually designed with a 50 to 70° (60° is common) slope to allow dust to flow freely from the top of the hopper to the bottom discharge opening.



Hopper

11.Shell:-

The shell structure encloses the electrodes and supports the precipitator components in a rigid frame to maintain proper electrode alignment and configuration (Figure 2-22). The support structure is especially critical for hot-side precipitators because precipitator components can expand and contract when the temperature differences between the ESP (400°C or 752°F) and the ambient atmosphere (20°C or 68°F) are large. Excessive temperature stresses can literally tear the shell and hopper joints and welds apart. The outer sheet or casing wall is usually made of low-carbon or mild-grade steel that is 0.5 to 0.6 cm (3/16 to 1/4 in.) thick.



ESP shell

12.Fly Ash Level Detection in ESP Hoppers:-

In Thermal Power Stations, some amount of ash particles are prone to get carried away with the exhaust air of the Boiler. In order to prevent these ash particles from being exhausted out of the stack, they are collected in the Economizer of the Boiler by gravity method. However, a large portion of the Fly-ash particles which can not be trapped in the Economizer are collected in the ESP Hoppers below the Electrostatic Precipitators (ESP) having high peak voltage of 71 KV on the collecting plates to polarize the Fly-Ash Particles.

13.ESP INSULATORS:-

14.ESP RAPING GEARED MOTOR:-

15.MACHINERY:-








MACHINERY:-

MACHINERY:-

16. GALLERY:-

GALLERY:-

GALLERY:-

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Space Available: 107747 Sq. Feet
Covered Space: 43013 Sq. feet.
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Material Handling Provision: 10TonEOT

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